

METHOD OF COOLING FOR CERAMIC MATRIX COMPOSITES

ABSTRACT

A ceramic matrix composite (CMC) structure, and method of forming same, the structure having internal air flow channels and cooling holes created by the process of sewing or stitching a fugitive fiber or thread into plies of ceramic cloth, preferably prior to consolidation of the ceramic cloth with a CMC slurry, followed by heating to convert the slurry material to a hardened ceramic component part of a predetermined shape. Upon heating the infiltrated and consolidated ceramic cloth to about between 1100 and 2100 degrees Fahrenheit, such as by hot pressing the structure containing the fugitive fibers therein, the fugitive fibers disintegrate, leaving channels and cooling holes wherever the stitched fugitive fiber or thread was previously located. Thus, the channels and cooling holes flow between plies as well as across the surface of the top and bottom plies.